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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/543,604	04/05/2000	Dieter Mueller	81208-246298	6492

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STEVEN W SMYRSKI, ESQ
SMYRSKI & LIVESAY, LLP
3310 AIRPORT AVENUE SW
SANTA MONICA, CA 90405-6118

EXAMINER

LEE, HWA S

ART UNIT PAPER NUMBER

2877

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/543,604

Applicant(s)

MUELLER ET AL.

Examiner

Andrew H. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

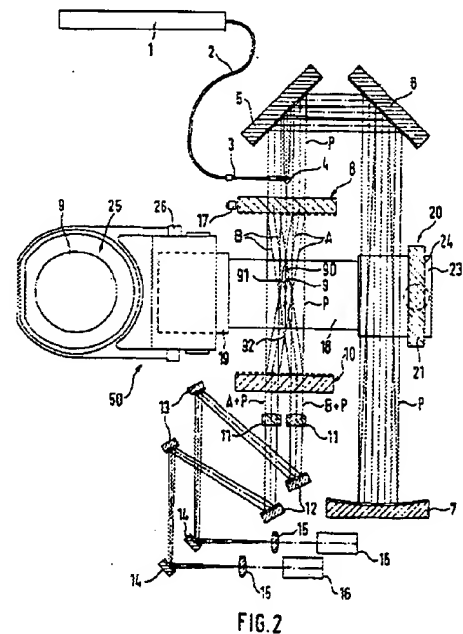
1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-7, 10-13, 16-19, 22, and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller (6,271,925) in view of Elssner et al. (DD 261422).

As for **claims 1, 2, 6, 7, 11, 16, 17, and 18**, Muller shows an apparatus and method for measuring two opposite surfaces of a body comprising:

- a light energy generating device (1);
- a collimator (7);
- at least one diffraction grating (8);
- at least one second diffraction grating (10);
- at least one receiving collimator (11);
- at least one camera (16).



Although Muller shows “a plurality of reflective surfaces for receiving light energy from said diffraction grating” by interpreting surfaces 90 and 91 as the reflective surfaces thus meeting the limitations of claims 1, Muller does not show the reflecting surface being used as reference surfaces. Elssner et al (Elssner hereinafter) show an interferometer for measuring surface smoothness of an object wherein a reference reflecting surface is used to reflect the other

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first order diffraction (-1 order diffraction). The use of the reference surface allows for better quality of measurements due to the use of combining a first order diffraction with another first order diffraction rather than combining a first order diffraction with a zero order diffraction where intensities of the two orders can be different. In addition, the recombining of beams originating from the same portion of the illumination beam remain constant thus removing errors due to inconsistencies of the original beam.

Therefore, at the time of the invention, one of ordinary skill in the art would have been motivated to modify Muller to use a reference reflecting surface of Elssner in order to obtain better surface measurements. Furthermore, since Muller teaches the measuring of two surfaces of the specimen, one of ordinary skill in the art would have used two reference surfaces (“a plurality of reflective surfaces”), each reference surface corresponding to each specimen surface in order to provide a reference surface for the specimen surface. As for **claims 11 and 17**, one of ordinary skill in the art would have placed each reference surfaces parallel to their respective specimen surface wherein the reference surface receives nonzero order energy since Elssner shows the placement of a reference surface parallel to the specimen surface receiving nonzero order energy in order to direct the beam to the second diffraction grating.

As for **claims 4, 13**, Muller shows the calibrating of the interferometer in column 3, lines 17+.

As for **claims 5, 16, and 23** the image aspect ratio is altered by the grating and mirrors (12-14).

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3. **Claims 3, 10, 12, and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller and Elssner as applied to claims 1, 2, 6, 7, 11, 17, and 18 above, and further in view Kulawiec et al (5,719,676). Muller and Elssner fail to expressly show the blocking of zero order light. Kulawiec et al (Kulawiec hereinafter) shows in Figure 7, the measurement of opposite sides of a body wherein zero order light is blocked (column 9, second paragraph). At the time of the invention, one of ordinary skill in the art would have modified Muller and Elssner to block zero order light in order to obtain clearer measurements by blocking zero order light from interfering with combined beam that contains measurement information.

4. **Claims 8, 9, 14, 15, 20, and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller and Elssner as applied to claims 1, 2, 6, 7, 11, 17, and 18 above, and further in view of in view of Ai et al. (5,471,303).

Muller and Elssner fail to expressly show an interferometric normal incidence inspection device. Ai shows a combination of two interferometers for surface profile measurement in a single apparatus comprising a light emitting device (34 or 36), a beamsplitter (24), a collimator (lens in 14), and a semitransparent reflecting mirror (24). Ai et al suggest the use of a second normal incident interferometer to improve the accuracy of height measurements made by a first normal incident interferometer. At the time of the invention, one of ordinary skill in the art would have used a second interferometer in order to improve the measurements of the first interferometer since the second interferometer provides a redundant measurement or the second interferometer has better a range of height measurements or improved accuracy.

Response to Arguments

5. Applicant's arguments filed 8/27/03 have been fully considered but they are not persuasive.

6. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, a reference surface for comparing the reference surface to a sample surface is knowledge generally available to one of ordinary skill in the art. The applicant requests a reference that the use of a reference surface for comparing to a sample surface. In response, the examiner cites US Patent No. 5,923,425, where a reference surface is used to compare with the test surface in a grazing incidence interferometer.

7. In response to applicant's argument that Muller and Elssner can not be combined, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this instance, Elssner teaches the use of a reference surface in a grazing incidence interferometer. It was that particular teaching, and no other

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feature or element, that the examiner was looking to. The applicant further argues that the combination would not be operable in the manner alleged. The examiner respectfully disagrees since according to the applicant's admission in the specification, the combination would work. The applicant only argues and does not cite clear reasons why the use of a reference mirror in the apparatus of Muller would not work or is not enabling, except for it appears to the examiner that the applicant believes that the examiner in trying to incorporate the hologram of Ellsner in the combination. As previously stated, the examiner was looking to Ellsner for the use of a reference mirror and no other element including the hologram.

8. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Papers related to this application may be submitted to Technology Center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the PTO Fax Center located in CP4-4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Center numbers are 703-872-9306 for regular communications and for After Final communications

If the Applicant wishes to send a Fax dealing with either a Proposed Amendment or for discussion for a phone interview then the fax should:

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a) Contain either the statement "DRAFT" or "PROPOSED AMENDMENT" on the Fax Cover Sheet; and

b) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa Lee whose telephone number is (703) 305-0538.

The examiner can normally be reached on M-Th. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 703-308-4881.

A handwritten signature in black ink, appearing to read 'Andrew Lee', is positioned above the printed name.

Andrew Lee
Patent Examiner
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May 2, 2004/ahl